How to set up router for x-server on your computer

Actually, the cygwin-x is an x-server running on your PC. It is a SERVER, not a client. The paradox is an x-client in this case. The x-server will open its port 6000, accepts incoming call from x-client.

As an x-client, paradox needs to know the x-server’s IP address, so that it could send displayed information to x-server. If your PC has a unique internet IP address, I think you will not encounter any problem. One possible problem is you might need to open port 6000 in your FireWall program.

If you have a router at home, and your PC is behind the router, then your PC’s IP address is not a unique internet IP address, it could not be recognized by x-client paradox. So the information sent by paradox will never reach your PC.

How to know your PC’s IP address:
Click Start
--> Run
--> type in: cmd
--> type into the new command window: ipconfig

If your IP address starts with “192.168”, that means it is an internal IP address.

In this situation, the x-client should use your internet IP address which is the IP address of your router, as the x-server’s IP address. This could ensure the data sent by x-client reaches your router’s port 6000. Once the data reaches your router, your router should send it to your PC. But router will not do by default; you have to tell it to do so.

What you want to tell the router to do is called “port-forwarding”. That is, whenever your router receives something from port 6000, it will forward it to the computer you assigned to it. How does your router recognize your computer? It uses the internal IP address, which is your computer’s IP address starting with “192.168”.

Different Router has different configure interface. The following image is my router’s configuration interface. In this case, my computer’s internal IP address is 192.168.1.100.
I don’t have cygwin installed on my computer, so I don’t know how you run the x-application on paradox. If you set up port forwarding and it still doesn’t work, you could try this. I assume that cygwin will automatically use your IP address, which is an internal IP address, as the x-server address, and tells x-client. This is wrong. So I think the correct method is, after you log on paradox, type:

```
xterm –display your-INTERNET-ip-address:0.0&
```

A xterm window should pop up. In this window, you can use any x-application command, such as nedit, netscape, xman… This is to tell x-client to use your internet ip address as x-server address.

How to know your INTERNET IP address:
Normally, in your router’s configuration interface, there will be a status page. The following image is my router’s status page. You can see my router’s internet IP address is 67.163.233.209.

So after I log on paradox, I will type:

```
xterm –display 67.163.233.209:0.0&
```
If you use port-forwarding, your computer should have a fixed internal IP address. Otherwise, each time it changes, you have to re-configure the router’s port forwarding internal IP address.

Keep in mind, there is only one computer behind router could use x-application, since you could only forward port 6000 to one computer. I don’t know how to tell x-server use different port number.

Other things about x-server include, you can log on to more than one unix machine (e.g. paradox, unix.cis.pitt.edu…), and run x-applications from there machines in your computer, in the same x-window.

I still don’t know how to make x-server secure. If anybody knows how to do it, I’m glad to know.

Here is a simple figure similar with Dr. Spring draw on class:
Paradox
Paradox.sis.pitt.edu

Some data
Port 6000

Your Router
67.163.233.209

Some data
Port 6000

Your computer
192.168.1.100

Other computer
192.168.1.101

If there is any question, please don’t hesitate to contact me.

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